AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

1. **(previously presented):** A wavelength converting element comprising:

an optical crystal substrate;

inverted domains formed at an interior of the optical crystal substrate; and

a waveguide which is formed by ion implantation and which intersects the inverted domains, wherein the waveguide is formed by proton implantation.

2. **(canceled)**.

3. **(previously presented)**: A method of manufacturing a wavelength converting element comprising a step of forming a waveguide by carrying out ion implantation after inverted domains have been formed at an interior of an optical crystal substrate, wherein in the ion implantation, protons are implanted.

4. **(original)**: A method of manufacturing a wavelength converting element comprising a step of forming inverted domains after a waveguide has been formed at an interior of an optical crystal substrate by carrying out ion implantation.

5. **(original)**: A method of manufacturing a wavelength converting element comprising the steps of:

forming inverted domains at an interior of an optical crystal substrate;

pattern-forming a metal film on the optical crystal substrate at which the inverted domains have been formed, such that at least a region at which a waveguide is to be formed is exposed;

applying a negative photoresist on the patterned metal film;

exposing the negative photoresist by using the patterned metal film as a mask, by irradiating ultraviolet light from a reverse surface of the optical crystal substrate to which the negative photoresist has been applied;

carrying out developing thereafter so as to form a resist pattern on the region at which the waveguide is to be formed;

forming a metal film by electroplating by using the patterned metal film as an electrode and by using the negative photoresist as a mask;

removing the negative photoresist thereafter;

carrying out ion implantation at portions of the optical crystal substrate from which the negative photoresist has been removed, by using the metal film formed by the electroplating as an ion implantation mask; and

forming an optical waveguide by carrying out annealing thereafter.

6. **(original)**: A method of manufacturing a wavelength converting element according to claim 5, wherein given that an angle formed by a surface of the optical crystal substrate and a C axis of the optical crystal substrate is θ, a period at which the inverted domains are formed is p, and a distance from a distal end of a comb-shaped electrode, which is for forming the inverted domain and which is formed at the surface of the optical crystal substrate, to a central position of the waveguide formed by the ion implantation is G,

in the ion implantation, the concentration peak of the ion implantation is formed at a distance of substantially ($G \cdot \tan\theta + p/4$) from the surface of the optical crystal substrate.

7. **(original)**: A method of manufacturing a wavelength converting element according to claim 5, wherein the metal film formed by the electroplating is a gold film.

8. **(original)**: A method of manufacturing a wavelength converting element according to claim 6, wherein the metal film formed by the electroplating is a gold film.

9. **(canceled)**.

10. **(original)**: A method of manufacturing a wavelength converting element according to claim 4, wherein in the ion implantation, protons are implanted.

11. **(original)**: A method of manufacturing a wavelength converting element according to claim 5, wherein in the ion implantation, protons are implanted.

12. **(original)**: A method of manufacturing a wavelength converting element according to claim 6, wherein in the ion implantation, protons are implanted.

13. **(original)**: A method of manufacturing a wavelength converting element according to claim 7, wherein in the ion implantation, protons are implanted.

14. **(original)**: A method of manufacturing a wavelength converting element according to claim 8, wherein in the ion implantation, protons are implanted.

15. **(previously presented):** A wavelength converting element according to claim 1, wherein the waveguide is formed in the interior of the optical crystal substrate and substantially not exposed to an exterior of the optical crystal substrate.

16. **(previously presented):** A wavelength converting element according to claim 1, wherein an angle formed by a surface of the optical crystal substrate and a C axis of the optical

crystal substrate is θ, a period at which the inverted domains are formed is p, and a distance from a distal end of a comb-shaped electrode at the surface of the optical crystal substrate for forming the inverted domains to a central position of the waveguide formed by the ion implantation is G, and the central position of the waveguide is at a depth substantially equal to $(G \cdot \tan\theta + p/4)$ from the surface of the optical crystal substrate.

17. **(previously presented):** A wavelength converting element according to claim 16, wherein the central position of the waveguide is the concentration peak of the ion implantation.

18. **(previously presented):** A wavelength converting element comprising:

an optical crystal substrate;

inverted domains formed at an interior of the optical crystal substrate; and

a waveguide which is formed by ion implantation and which intersects the inverted domains, wherein an angle formed by a surface of the optical crystal substrate and a C axis of the optical crystal substrate is θ, a period at which the inverted domains are formed is p, and a distance from a distal end of a comb-shaped electrode at the surface of the optical crystal substrate for forming the inverted domains to a central position of the waveguide formed by the ion implantation is G, and the central position of the waveguide is at a depth substantially equal to $(G \cdot \tan\theta + p/4)$ from the surface of the optical crystal substrate.

19. **(previously presented):** A wavelength converting element according to claim 18, wherein the central position of the waveguide is the concentration peak of the ion implantation not at the surface of the optical substrate.

20. **(currently amended)**: A method of manufacturing a wavelength converting element comprising:

forming inverted domains at an interior of an optical crystal substrate using comb-shaped electrodes formed at a surface of the optical crystal substrate; and

forming an optical waveguide in the interior of the optical crystal substrate, wherein an angle formed by the surface of the optical crystal substrate and a C axis of the optical crystal substrate is θ, a period at which the inverted domains are formed is p, and a distance from a distal end of one of the comb-shaped electrodes to a central position of the waveguide formed by ~~the~~ ion implantation is G, and in the ion implantation, the concentration peak of the ion implantation is formed at a distance of substantially $(G \cdot \tan\theta + p/4)$ from the surface of the optical crystal substrate.

21. **(new)**: A wavelength converting element according to claim 1, wherein a central position of the waveguide is substantially at a center depth of an intersecting portion of one of the inverted domains intersecting the waveguide, wherein the center depth is from a top surface of the optical crystal substrate to a center of the intersecting portion.

22. **(new)**: A method of manufacturing a wavelength converting element according to claim 3, wherein the step of forming the waveguide comprises forming a central position of the waveguide substantially at a center depth of an intersecting portion of one of the inverted domains intersecting the waveguide, wherein the center depth is from a top surface of the optical crystal substrate to a center of the intersecting portion.

23. **(new)**: A method of manufacturing a wavelength converting element according to claim 4, wherein a central position of the waveguide is substantially at a center depth of an intersecting portion of one of the inverted domains intersecting the waveguide, wherein the center depth is from a top surface of the optical crystal substrate to a center of the intersecting portion.

24. **(new)**: A wavelength converting element according to claim 1, wherein an angle formed by a surface of the optical crystal substrate and a C axis of the optical crystal substrate is θ, a period at which the inverted domains are formed is p, and a distance from a distal end of a comb-shaped electrode at the surface of the optical crystal substrate for forming the inverted domains to a central position of the waveguide formed by ion implantation is G, and the central position of the waveguide is at a depth greater than $G \cdot \tan\theta$ from the surface of the optical crystal substrate.

25. **(new)**: A method of manufacturing a wavelength converting element according to claim 3, wherein the step of forming the waveguide comprises forming a central position of the waveguide at a depth greater than $G \cdot \tan\theta$ from the surface of the optical crystal substrate, wherein an angle formed by a surface of the optical crystal substrate and a C axis of the optical crystal substrate is θ, a period at which the inverted domains are formed is p, and a distance from a distal end of a comb-shaped electrode at the surface of the optical crystal substrate for forming the inverted domains to a central position of the waveguide formed by ion implantation is G.

26. **(new)**: A method of manufacturing a wavelength converting element according to claim 4, wherein an angle formed by a surface of the optical crystal substrate and a C axis of the optical crystal substrate is θ, a period at which the inverted domains are formed is p, and a distance from a distal end of a comb-shaped electrode at the surface of the optical crystal substrate for forming the inverted domains to a central position of the waveguide formed by ion implantation is G, and the central position of the waveguide is at a depth greater than $G \cdot \tan\theta$ from the surface of the optical crystal substrate.